|  |  |  |
| --- | --- | --- |
| **Stage 1 Desired Results** | | |
| CCSS-Mathematics Standards  3.NBT.1  3.NBT.2  3.NBT.3  3.MD.3  3.MD.4 | ***Transfer*** | |
| *Students will be able to independently use their learning to…*  manipulate numbers and assess the reasonableness of their answers when solving real world problems. | |
| ***Meaning*** | |
| UNDERSTANDINGS  *Students will understand that…*  Place value is necessary in determining number value.  There are many ways to write a number.  Rounding is an appropriate estimation strategy that can be used to check the reasonableness of answers.  There are different ways to solve problems depending on the information in a problem and our personal preferences. | ESSENTIAL QUESTIONS  When is an exact answer more desirable than an estimate?  How can you verify that your answer is correct?  How is place value important in every day life?  How would your life be different if you did not know how to add, subtract, or multiply? |
| ***Acquisition*** | |
| *Students will know…*  -Place value (values of digits up to 1000)  -Key vocabulary  -Estimation reasonableness  -Rules for rounding  -When to add, subtract, or multiply  -Properties of addition and subtraction  -Problem solving strategies for addition and subtraction  -How place value is related to multiplication  -That bar graphs, picture graphs, and line plots show data | *Students will be skilled at…*  -Rounding numbers to the nearest 10 or 100  -Estimating the sum and/or difference of numbers  -Adding and subtracting numbers within 1000  -Use a number line and hundreds chart to find patterns in numbers  -Using various algorithms to add and subtract  -Regrouping when adding  -Multi-digit numbers  -Adding more than two numbers  -Using fact families to find missing addends  -Identify missing or extraneous information  -Solving and writing addition and subtraction word problems  -Using place value models to multiply  -Solving addition and subtraction problems based on picture graphs, bar graphs, and line plots |
| **Stage 2 - Evidence** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| <type here> | PERFORMANCE TASK(S):   1. Sort real world situations based on “estimate” vs. “exact” 2. Manipulating with place value blocks based on given instructions 3. Island Hop (Georgia) -- formative 4. Shake, Rattle, and Roll (Georgia) -- formative 5. The Great Round Up! (Georgia) – formative 6. What’s the Story Here? (Georgia) – summative 7. Find and explain errors in the use of place value in real world situations 8. Solve real world problems using your choice of algorithm; explain and justify your answer by checking with another method 9. Summative and Formative Assessments (Teachers should add their own assessments)   \*There are other performance tasks found in Stage 3 that are not listed above. | |
| <type here> | OTHER EVIDENCE:   1. Teacher/Student Conferences 2. Class Discussion of Essential Questions 3. Teacher Observations 4. First in Math Reports 5. “Two Ways” and “Math Squares” from *Coming to Know Number* 6. Cooperative Learning Activities 7. Student Reflections 8. Math Games | |
| **Stage 3 – Learning Plan** | | |
| *Summary of Key Learning Events and Instruction*  RESOURCES:  <https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_3_Unit1FrameworkSE.pdf>  [*http://www.nsa.gov/academia/\_files/collected\_learning/elementary/arithmetic/reasonable\_estimates.pdf*](http://www.nsa.gov/academia/_files/collected_learning/elementary/arithmetic/reasonable_estimates.pdf)  *SmartBoard Notebook File*   1. Start with an open discussion about “What do we know about numbers?” (Compare numbers, discuss place value, ordering numbers, connecting to real world situations – *When will it be important to know how to tell which number is more/less, money, when do we order numbers, connect to technology (Twitter, Facebook, television programs), what zero means in a number)* Connect to literature: Read *A Place for Zero,* by Angeline Sparagna LoPresti, *Sir Cumference and All the King’s Tens* by \_\_\_\_\_\_\_\_\_\_\_\_\_, *How Many Ants?* By Brimner, or *A Million Dot* by Andrew Clements and discuss. 2. Review place value concepts based on needs of your class/pretest results. (Multiple forms of numbers, comparing numbers, ordering numbers, digit values, base-ten blocks/models, different ways of representing a number) **Performance task 2 – Probe 3, page 54 *Uncovering Student Thinking in Mathematics*.** 3. Estimation and Rounding: *What is estimation? When should we estimate?* (Suggested Hook: students participate in various situations in which you would estimate or be exact, such as measuring for a recipe, bringing treats for the class, putting sand in a jar, buying clothing, estimated running total of grocery bill/number of items, etc.) Then make a tree map depicting situations in which it’s best to estimate vs. find an exact value. Students engage in several activities in which they come up with and sort situations and defend their answers. **Performance task 1.** 4. Students participate in “Island Hop” activity Part I and Part II. Students explore which numbers round to given decades or “nice numbers.” 5. Index Card number line activity in which students practice rounding numbers to the nearest ten and hundred. 6. Students participate in “The Great Round Up” game in pairs. 7. Practice finding the “decades” around a given number using open number lines. Use numbers up to 1,000. (Background Knowledge from “Shake, Rattle, and Roll”) Students participate in an estimating game: <http://www.oswego.org/ocsd-web/games/Estimate/estimate.html> and explain/defend their answers. 8. After several experiences, have students work in groups to create what they believe are rules for rounding. Then, have a class discussion and create a class set of “Rules for Rounding” based on patterns they notice. **Probe 4, page 58, *Uncovering Student Thinking in Mathematics*** 9. Introduce addition and subtraction: *What is it? Vocabulary. When do we add? When do we subtract?* Make a tree map of situations in which we add/subtract. Think-Pair-Share. 10. Review of addition -- choose your own strategy (concrete, transitional, representational/algorithms) for given number/word problems; discuss and defend your strategy; critique the strategies of others. Encourage students to verify their answer using multiple algorithms/strategies. (See unpacking document page 16)  **Probe 15, page 128** 11. Notice patterns on a Hundreds Chart when adding. Students draw conclusions and create a class “Public Record” describing these patterns. 12. Introduce rounding with addition. 13. Students engage in “Mental Mathematics” activity (Georgia website). Students share their strategies, critique the strategies of others, etc. 14. Index Card Number Line activity. Create a “decades” number line on the ground. Give students an index card with a two-digit plus two-digit addition expression. Students must mentally add their numbers and stand on the estimated sum. Then explain their thinking and check their work. 15. Practice rounding with addition – *Suggested Activities from the Georgia website:* “Shake, Rattle, and Roll,” “Perfect 500,” and “Take 1,000.” 16. Assessment: **Probe 19, page 155 *Uncovering Student Thinking in Mathematics*** 17. Review subtraction – choose your own strategy (concrete, transitional, representational/algorithms) for given number/word problems; discuss and defend your strategy; critique the strategies of others. **Probe 16, page 136 *Uncovering Student Thinking Mathematics*** 18. Introduce rounding with subtraction. 19. Students work in groups to come up with situations in which you might estimate and subtract. Share ideas with class and debate – would an exact answer be better? Then students independently write their own subtraction estimation word problems; students evaluate each other’s word problems. 20. Practice rounding with subtraction – Index Card Number Line activity with two-digit subtraction expressions. 21. Students play “Take Down.” (Georgia website) 22. Calculator scenarios: discuss calculators as a tool – pros and cons. Give word problems and show how “Jimmy” found his answer on a calculator. Have students discuss whether or not his answer is reasonable. (They should discuss estimation, place value, algorithms, etc.) For example: “The bakery made 329 cakes on Saturday and 298 cakes on Sunday. How many cakes did the bakery make that weekend?” Jimmy punched the numbers into his calculator and the resulting sum was 427. Is his answer reasonable? What might have happened? 23. Students complete “Estimating Sums and Differences: Independent Practice” (nsa.gov) 24. Do the “Field Day” activity (Georgia website) and have students complete the word problems independently or with a partner. Ensure that students check their answers using estimation to make sure their answers are reasonable. 25. Properties of Addition and Subtraction: “The Power of Properties” (Georgia website) 26. Review properties with Smart Exchange activity about properties. 27. Introduce multiplication of ten by engaging students in “Watch How Numbers Grow?” 28. Constructing task: “Multiples of Ten.” 29. Performance task: “How Many Tens?” Read *100 Hungry Ants* and complete activity. 30. Assess multiplying by 10 – students should be able to explain and justify their answers. 31. Introduce graphing: “The Information Station!” (Georgia website) 32. Optional performance task: “It’s a Data Party!” (Georgia website) 33. Review of all skills. 34. Culminating task: “What’s the Story Here?” (Georgia website) | | |

UbD Template 2.0